

**To:** LEE, LILY[LEE.LILY@EPA.GOV]  
**From:** Ripperda, Mark  
**Sent:** Fri 2/26/2016 10:02:36 PM  
**Subject:** RE: Rad question from member of the public

No inconsistency. Resrad and the PRG calculators are just tools. The Navy demonstrates compliance with ROD requirements in the FSS with Resrad and Rob does a double check with the Rad PRG calculator. Sounds like a good system.

**From:** LEE, LILY  
**Sent:** Friday, February 26, 2016 1:41 PM  
**To:** Ripperda, Mark <Ripperda.Mark@epa.gov>  
**Subject:** FW: Rad question from member of the public

Dear Mark,

Thank you for your voicemail yesterday. Here's some more context. The table sent by Ms. Montelongo-Acosta was from the ROD showing actual risk. I took the 2012 RACR actual Residual dose 0.2596 mrem/y. Since I have started working with Rob, he's been using the 6/2014 version of PRG's to review each SUPR as it comes through. But is that inconsistent with the ROD?

Page 7-10 of the ROD (p. 89 of pdf):

### **7.1.5.3            *Radiological Dose and Risk***

Exposure to radiation at each radiologically impacted site was modeled for former building sites and open land areas; these risk calculations are based on surface characterization and not on subsurface data. Exposure to radiation at radiologically impacted structures was modeled using RESRAD-BUILD. Table 7-3 presents the results of the risk evaluation. Table 7-1 summarizes the risk by redevelopment block. The radionuclides of concern were used in the RESRAD and RESRAD-BUILD models. The actual risk and dose will be calculated using the results of the final status survey. The actual doses will be lower than the release limits.

$^{226}\text{Ra}$  is the only naturally occurring radionuclide of concern at Parcel B.  $^{137}\text{Cs}$  is present in trace quantities because of fallout from nuclear weapons testing. The dose and risk modeling considered the background concentration for radionuclides other than  $^{226}\text{Ra}$  to be 0 picocuries per gram (pCi/g). The  $^{226}\text{Ra}$  background concentration was assumed to be the measured background level of 0.5 pCi/g.

The background concentrations of radionuclides of concern were assumed to be 100 disintegrations per minute (dpm) per 100 square centimeters for surfaces to model total risk from radiologically impacted buildings. This assumption was made because none of the radionuclides of concern were found in building materials, except for  $^{226}\text{Ra}$  which can be found in earth materials (e.g., concrete, cement and ceramic tile).

**TABLE 7-3: RADIOLOGICAL RISK RESULTS**

Parcel B Amended Record of Decision, Hunters Point Shipyard, San Francisco

**RESRAD-BUILD Results**

<b>Impacted Building</b>	<b>Radiological Risk<sup>a,b</sup></b>	
Building 103	$1.48 \times 10^{-6}$	
Building 113	$1.48 \times 10^{-6}$	
Building 113A	$1.60 \times 10^{-6}$	
Building 130	$1.60 \times 10^{-6}$	
Building 140	$1.44 \times 10^{-6}$	
Building 146	$1.16 \times 10^{-6}$	

Notes:

- a Total risk and dose is equivalent to incremental risk and dose. Actual calculations are based on field measurements from the final status survey results. Incremental risk does not exist if background is present at or below ambient levels; total risk includes risk from all chemical constituents.
- b Total excess lifetime cancer risk

**RESRAD Results**

<b>Total Dose and Risk<sup>a</sup></b>		
<b>Impacted Soil Area</b>	<b>Radiological Risk<sup>b</sup></b>	
Building 142 Site	$6.39 \times 10^{-5}$	
Building 157 Site	$8.90 \times 10^{-5}$	
IR-07	$4.51 \times 10^{-5}$	
IR-18	$4.51 \times 10^{-5}$	

**Incremental Dose and Risk<sup>a</sup>**

Lily Lee

Cleanup Project Manager

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**From:** LEE, LILY

**Sent:** Thursday, February 18, 2016 8:43 AM

**To:** Ripperda, Mark <[Ripperda.Mark@epa.gov](mailto:Ripperda.Mark@epa.gov)>

**Subject:** Rad question from member of the public

Dear Mark,

I hope you're doing well. I've gotten a question from the UC Santa Cruz Dept of Nuclear Policy, where Dan Hirsch is a lecturer. Greenaction is asking EPA to meet with them together. The bottom of the email has the original question. Above it is my research to try to understand what is going on. Can I call you some time to get your perspective, since the 2009 ROD was under your watch? I don't see the 2012 Rad RACR approval in files I inherited from Craig, so I assume that he must have used the 2012 relevant assumptions to ensure the risk criteria were met.

I have some bigger picture questions, though, about what are appropriate release criteria.

Thanks!

- Lily

**From:** LEE, LILY [<mailto:LEE.LILY@EPA.GOV>]  
**Sent:** Tuesday, February 16, 2016 11:58 AM  
**To:** Bacey, Juanita@DTSC; Terry, Robert  
**Subject:** From Rad RACR: FW: Rad risk at Bldg 140 in Parcel B

Ok, I found this below in the RACR.

Using the method from Ms. Montelonga-Acosta:

Residual dose  $0.2596 \text{ mrem/y} \times 70 \text{ yrs} \times 1.16 \text{ E-3} = 21 \text{ E-6} = 2.1 \text{ E-5}$ , which is in the EPA risk range.

Using the EPA current practice of assuming 26 yrs exposure &  $8.46 \text{ E-4}$ , the risk would be  $57 \text{ E-7} = 5.7 \text{ E-6}$

All of these are within the EPA risk range.

Am I doing this right?

[http://www.envirostor.dtsc.ca.gov/regulators/deliverable\\_documents/9856556534/Hunters%20Point\\_F](http://www.envirostor.dtsc.ca.gov/regulators/deliverable_documents/9856556534/Hunters%20Point_F)

p. 89 of pdf, p. 4-11 of hard copy:

“RESRAD modeling was performed using the maximum Cs-137 concentration of 0.2043 pCi/g

obtained from the discharge pipes. (Separate modeling efforts were performed for the Discharge

Channel and are summarized in Section 4.4.2.) Modeling was performed using default parameters and the discharge pipes were assumed to be completely filled with soil/sediment at

this activity concentration. The RESRAD modeling results indicated a residual dose of 0.2596

mrem/y with an excess lifetime cancer risk of  $4.236 \times 10^{-6}$ . These results fall within the acceptable NCP risk management range of  $10^{-6}$  to  $10^{-4}$ , which supports radiological free release.

The modeling parameters and results were presented in Attachment 3 to the Technical Memorandum (Appendix U).

#### **4.3.4 Building 140 Regulatory Concurrence**

The Draft Technical Memorandum was submitted to the regulatory agencies for review.

Comments to the Building 140 Technical Memorandum were provided by the EPA and DTSC in

June 2011 and responses were prepared. The Final Technical Memorandum (Appendix U)

incorporated the responses to comments submitted by the EPA and DTSC and was published on

July 20, 2011. The DTSC and CDPH subsequently concurred with the radiological release for

unrestricted use of Building 140 (Appendix R). According to previous statements by the EPA,

their decision for radiological free release of the Parcel B buildings/structure and former building

sites will be based on the data and analyses presented in this Radiological RACR.

Lily Lee

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**From:** LEE, LILY

**Sent:** Tuesday, February 16, 2016 11:22 AM

**To:** 'Bacey, Juanita@DTSC' <[Juanita.Bacey@dtsc.ca.gov](mailto:Juanita.Bacey@dtsc.ca.gov)>

**Subject:** FW: I think I know how she got  $4.4 \times 10^{-4}$  FW: Rad risk at Bldg 140 in Parcel B

I just did a simple multiplication of

$70 \text{ years} \times (5.43 \text{ mrem/yr}) \times (10^{-3} \text{ rem/mrem}) \times (1.16 \times 10^{-3} \text{ excess cancer risk/rem}) = 4.4 \times 10^{-4} \text{ excess cancer risk for lifetime}$

Rob explained that these days USEPA assumes 26 years as the likely time people would live in a single home before they move to another home. And the current  $8.46 \times 10^{-4}$  excess cancer/rem is what EPA uses, though EPA is considering adopting the NAS number cited below of  $1.16 \times 10^{-3}$ . That comes out to  $1.2 \times 10^{-4}$ , which rounds down to  $10^{-4}$

He said that in the RESRAD-BUILD model, it's hard to tell what assumptions they used. Also assumptions have changed since 2009. So it would not be out-of-the ordinary for current assumptions to not match.

I'm checking now the 2012 Rad RACR for Parcel B, which includes the bldgs.,

[http://www.envirostor.dtsc.ca.gov/public/final\\_documents2.asp?global\\_id=38440002&doc\\_id=5005655](http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=38440002&doc_id=5005655)

**From:** Janice Montelongo-Acosta [<mailto:janice.pma@gmail.com>]  
**Sent:** Thursday, January 28, 2016 5:17 PM  
**To:** Bacey, Juanita@DTSC  
**Subject:** Questions about Final Amended Parcel B Record of Decision for Hunters Point

Greetings, I hope this email finds you well.

I am a local Bay Area community member with an inquiry concerning the radiological risk and dose calculations presented on the amended ROD for Parcel B of Hunters Point. I will be using table 7-3 on page 105 of the document as a specific reference.

The issue is that there is no clear methodology of how the risk numbers on the table were obtained. Essentially, the calculations for radiological risk do not, on the surface, make sense. Let's say one were to use the numbers pushed forward by the National Academy of Sciences to calculate radiological risk ( $1.16 \times 10^{-3}$  risk/rem). For the total lifetime radiological risk for building 140, for example, the calculation would be  $4.4 \times 10^{-4}$  risk, which is hundreds of times bigger the  $1.44 \times 10^{-6}$  shown on the chart. This trend follows up with other impacted buildings.

The table notes include no additional information about how the numbers were calculated. Will it be possible for you to direct me to that information, or perhaps even direct me to someone who will be able to explain these calculations? It would be much appreciated.

Thank you for your time and consideration. I look forward to your reply.



**TABLE 7-3: RADIOLOGICAL RISK RESULTS**

Parcel B Amended Record of Decision, Hunters Point Shipyard, San Francisco, California

**RESRAD-BUILD Results**

Impacted Building	Radiological Risk <sup>a,b</sup>	Dose (millirem/year)
Building 103	$1.48 \times 10^{-6}$	7.02
Building 113	$1.48 \times 10^{-6}$	7.02
Building 113A	$1.60 \times 10^{-6}$	1.45
Building 130	$1.60 \times 10^{-6}$	1.45
Building 140	$1.44 \times 10^{-6}$	5.43
Building 146	$1.16 \times 10^{-6}$	1.20

## Notes:

- a Total risk and dose is equivalent to incremental risk and dose. Actual calculated dose and risk will be based on field measurements from the final status survey results. Incremental risk does not include risk from chemicals present at or below ambient levels; total risk includes risk from all chemical concentrations.
- b Total excess lifetime cancer risk

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Janice